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Video and the analysis of embodied human interaction[1]

To demonstrate for this volume the importance of using video to analyze human action, including the detailed organization of talk and language structure, I am using an analysis of embodied argument by girls playing hopscotch. To describe how action is built in these data it is necessary to investigate a range of different kinds of semiotic phenomena in diverse media that mutually elaborate each other to create a whole that is not only different from, but goes beyond, any of its constituent parts. Such analysis, and the models of action and context it develops, would not be possible without ways of recording data that maintain the detailed sequential organization of not only talk, but also the mutual organization of living, bodies within interaction, and relevant features of the material environment that the participants are attending to. Though by no means perfect, audio-video recording does provide us with tools that enable us to begin to explore such issues.

This paper proposes and develops an approach to the analysis of action within human interaction that takes into account the simultaneous use of multiple semiotic resources by participants (e.g., a range of structurally different kinds of sign phenomena in both the stream of speech and the body, graphic and socially sedimented structure in the surround, sequential organization, encompassing activity systems, etc.). It is argued that actions are both assembled and understood through a process in which different kinds of sign phenomena instantiated in diverse media, what I call semiotic fields, are juxtaposed in a way that enables them to mutually elaborate each other. A particular, locally relevant array of semiotic fields that participants demonstrably orient to (not simply a hypothetical set of fields that an analyst might impose to code context) is called a *contextual configuration.* As action unfolds, new semiotic fields can be added, while others are treated as no longer relevant, with the effect that the contextual configurations that frame, make visible and constitute the actions of the moment undergo a continuous process of change. From a slightly different perspective contextual configurations provide a systematic framework for investigating the public visibility of the body as a dynamically unfolding, interactively organized locus for the production and display of meaning and action.
When action is investigated in terms of contextual configurations, domains of phenomena that are usually treated as so distinct that they are the subject matter of entirely separate academic disciplines, e.g., language and material structure in the environment, can be analyzed as integrated components of a common proc-

ess for the social production of meaning and action. This also provides an alternative geography of cognition to one that views all cognitive phenomena as situated within the mental life of the individual. Here cognition is a reflexively situated process that encompasses both 1) the sign making capacity of the individual, for example through the production of talk, and 2) different kinds of semiotic phenomena, from sequential organization to graphic fields, lodged within the material and social environment. This emphasis on cognition as a public, social process embedded within an historically shaped material world is quite consistent with both Vygotskian perspectives and recent work in the social and anthropological study of scientific and workplace practice, which Hutchins (1995) in a groundbreaking study has called «cognition in the wild», but adds to such perspectives an equally strong focus on the details of language use and conversational organization.

A central question posed for the analysis of how social action is constructed and understood through talk is determining what it is relevant to include within such a study. Frequently scholars with an interest in pragmatics have focused almost exclusively on phenomena within the stream of speech, or in the mental life of the speaker. Thus in Searle's (1970) analysis of speech acts the hearer exists only as a figment of the speaker's imagination, not as an active co-participant in her own right, e.g. someone who herself engages in conduct that contributes to the constitution and ongoing development of the action(s) being accomplished through the talk of the moment. In the human sciences in general language and the material world are treated as entirely separate domains of inquiry. Thus within anthropology departments one finds one group of scholars which focuses on language as the defining attribute of the human species working in happy isolation from archaeologists down the hall who argue that what makes human beings unique is the capacity to reshape the material environment in ways that structure human action on an historical time scale. Each of these proposals about what makes human beings a distinctive species is at best a partial truth. A theory of action must come to terms with both the details of language use and the way in which the social, cultural, material and sequential structure of the environment where action occurs figure into its organization.

The accomplishment of social action requires that not only the party producing an action, but also that others present, such as its addressee, be able to systematically recognize the shape and character of what is occurring. Without this it would be impossible for separate parties to recognize in common not only what is happening at the moment, but more crucially what range of events are being projected as relevant nexts, such that an addressee can build not just another independent action, but instead a relevant coordinated next move to what someone else has just done.[2] The necessity of social action having this public,

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[2] The study and theoretical formulation how such multi-party social action is recognized and accomplished has been a major topic in conversation analysis. See for example Schegloff's (1968) early formulation of *conditional relevance*, the analysis of adjacency pairs in Sacks

prospectively relevant visibility, so that multiple participants can collaborate in an ongoing course of coordinated action, casts doubt on the adequacy of any model of pragmatic action that focuses exclusively on the mental life of a single participant, such as the speaker. Within this process the production of action is linked reflexively to its interpretation; to establish the public, recognizable visibility of what they are doing speakers must build action that takes into account the particulars of what their addressees can and do know. This does not by any means ensure that congruent interpretation will automatically follow, or that relevant participants positioned at different perspectives will view events in the same way (see Goodwin 1995) for analysis of how the accomplishment of ongoing collaborative action can on occasion systematically require that different kinds of participants view the same event in alternative ways. However the organization of talk-in-interaction provides for the contingent achievement of relevant intersubjectivity through the continuing availability of processes such as repair (Schegloff 1992; Schegloff, et al. 1977). When the term action is used in this paper it should be understood as encompassing this interactively organized process of public recognition of meaningful events reflexively linked to the ongoing production of these same events through the use of appropriate semiotic resources within an unfolding temporal horizon.

In this paper it will be suggested that a primordial site for the analysis of human language, cognition and action consists of a situation in which multiple participants are attempting to carry out courses of action in concert with each other through talk while attending to both the larger activities that their current actions are embedded within, and relevant phenomena in their surround. Using as data video recordings of young girls playing hopscotch it will be argued that the production and interpretation of human social action is built through the simultaneous deployment of a range of quite different kinds of semiotic resources. Talk itself contains multiple sign systems with alternative properties. Strips of talk gain their power as social action via their placement within larger sequential structures, encompassing activities, social structural arrangements, and participation frameworks constituted through displays of mutual orientation made by the actors' bodies. The body is used in a quite different way to perform gesture, again a class of phenomena that encompasses structurally different types of sign systems. Both talk and gesture can index, construe, or treat as irrelevant, entities in the participants' surround. Moreover, material structure in the surround, such as graphic fields of various types, can provide semiotic structure without which the constitution of particular kinds of action being invoked through talk would be impossible. In brief it will be argued that the construction of action through talk within situated interaction is accomplished through the temporally unfold-

(1995) and Schegloff and Sacks (1973), the study of how hearers make projections about what is about to happen in an unfolding utterance in Jefferson (1973) and Goodwin and Goodwin (1987), and much other work in the field (see Heritage 1984; 1989) for descriptions of work in the field, and the theoretical issues being dealt with).

ing juxtaposition of quite different kinds of semiotic resources, and that more-
over through this process the human body is made publicly visible as the site for
a range of structurally different kinds of displays implicated in the constitution
of the actions of the moment.

Talk-in-interaction

To explore some of the different kinds of phenomena implicated in the organiza-
tion of face-to-face interaction within a setting that is the focus of the partici-
pant's orientation, I'll use the following brief dispute which occurred while three
young girls were playing hopscotch. One of the girls, Rosa, played only a pe-
ripheral role in the events that will be examined here, and analysis will focus on
the actions of the other two. I'll call the party whose actions are being challenged
Diana (i.e. the Defendant), and her Challenger Carla. In hopscotch players jump
on one foot through an ordered grid of squares drawn on the ground. If the
player's foot touches a line, or if she fails to land on the correct square she is
«out» and her turn is over. A player is prohibited from landing on a square with
a marker, such as a stone or a beanbag on it. After a successful jump through the
grid, the next jump is made more difficult by throwing markers on squares in a
particular sequence.[3] The dispute being examined here begins when Diana
stands at the top of the hopscotch grid (she has already successfully navigated
the entire grid from the bottom), throws her beanbag into a particular square,
and starts to hop through the grid. Right after the beanbag lands (in what will be
argued to be the wrong square) and as Diana starts to jump Carla walks into the
grid, physically stops Diana from continuing, and then argues that Diana has
made an illegal move by throwing her beanbag onto the fifth square instead of
the fourth. (Note that the squares could have become confused if Diana, who is

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[3] For more detailed exposition of the rules of hopscotch see Marjorie H. Goodwin (1998).
Girls games, such as hopscotch, have traditionally been offered as evidence that girls' social
organization, capacity to deal with rules, and ability to successfully engage in disputes is infe-
rior to that of boys (see for example Lever 1978). For example it is argued that a game such as
football has more players who occupy an array of structurally different positions than hop-
scotch or jumprope. Note that if this stereotype is true, girls, and the women they become,
should be less fit than men to engage in the dispute forums, such as the legal system and poli-
tics, that define power in a society. Marjorie H. Goodwin's studies of girls actual interaction
in the midst of games strongly contradicts such a view. She demonstrates that the disputes that
systematically emerge within a game such as hopscotch provide girls with a rich arena for the
analysis of each other's actions in terms of rules, with a place where rules can be challenged
and negotiated, and with an opportunity to develop an embodied habitus of power as girls use
the full resources of forceful argument to oppose each other's positions. See for example
Marjorie H. Goodwin (1985; 1994; 1995; 1998; 1999). Carla's actions in the present data are
certainly consistent with such an argument. In a more general study of the social worlds built
by children through their talk-in-interaction on the street, Marjorie H. Goodwin (1990b) found
that some of the dispute processes of girls, such as the He-Said-She-Said, were in fact far
more extended and complex than those of boys.

throwing from the top of the grid, instead of the usual throwing position at the foot (start) of the grid, had assigned numbers to the row in dispute so that they read from her current left to right, and thus failed to take into account that she was now looking at the grid from a reverse angle).

Here is a transcript of the talk that occurs here, with an English translation on the right[4], and a diagram of how the participants have been numbering the squares in the grid in their current game (the actual grid on the ground contains no numbers, only blank squares):

	Carla:	Chiriona porqu-	Cheater becaus-
		Éste es el *cua*:tr⌐o	This is the *fo*⌐ur
	Diana:	⌊*Ai*::	⌊*Ai*::
	Carla:	Y tú vas en el *CUA*TRO.	And you go in the *FO*UR.
		No vas en el *QUIN*TO.	You don't go in the *FIF*TH.

Figure 1

A number of different kinds of phenomena have to be taken into account in order to describe the interactive organization of the dispute that is occurring here. I want to focus on how some of these phenomena consist of sign systems that are built through use of the distinctive properties of a specific medium. For example spoken language builds signs within the stream of speech, gesture uses the body in a particular way, while posture and orientation use the body in another, etc. To have a way of talking about these subsystems I'll refer to them as *semiotic fields*. The term *semiotic* is intended to note the way in which signs are being deployed while *field* provides a rough term for pointing to the encompassing medium within which specific signs are embedded. What I want to demonstrate now is that the action that occurs here is built through the visible, public deployment of multiple semiotic fields that mutually elaborate each other. Subsequent analysis will investigate the way in which additional fields with distinctive properties are added to this mix.

Carla builds her action by deploying a number of different semiotic fields simultaneously. First, the lexico-semantic content of the talk provides Carla with resources for characterizing her opponent, *Chiriona*, (*cheater* line 1)[5] and for formulating the squares on the grid as particular kinds of entities, *el Cuatro* (*the four* line 4) and *el Quinto*, (*the fifth* line 5). A term such as *the fifth* explicitly constitutes the square being talked about as a consequential item within a larger sequence of similar items. Second, these descriptions are embedded within larger syntactic structures that contrast what Diana actually did with what she should have done. Moreover this contrast is made more salient, and indeed shaped as a contrast, by the reuse of a common syntactic frame (e.g «*Y tú vas en NUMBER// No vas en NUMBER*»), which highlights as significantly different both the negation at the beginning of the second unit, and the numbers being disputed which occur in the same slot at the end of each unit. Third, prosodically the numbers being disputed are further highlighted by the heightened, contrastive stress that each receives within a larger framework of parallelism displayed by producing each line with the same pitch contour: Thus in both lines 4 and 5 Carla's pitch makes a high jump just after *vas*, then falls over *en el*, then raises over the first syllable of each number, the space where contrast is being marked, and finally falls over the final syllable of the number, which is also the final syllable of the breath group. (See figure 2)

In building her utterance Carla combines lexico-semantic content, a common syntactic frame, and the reuse of a rhythmic pitch contour capable of vividly highlighting the central point of an argument being built through contrast to tell Carla why what she has done is wrong.

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[5] Norma Mendoza-Denton (personal communication 1995) points out that this example shows how the bilingual phonology of the children operates, taking the English word *cheater* and codeswitching in the middle of it at a morphological boundary by changing the /t/ of *cheat* to /r/. Although the vowel quality is primarily Spanish, the word has an English phonologial process operating within it, with the intervocalic flapping of /t/.

túvas	en	el	cua	tro

4

Novas	en	el	quin	to

5

Carla   Diana

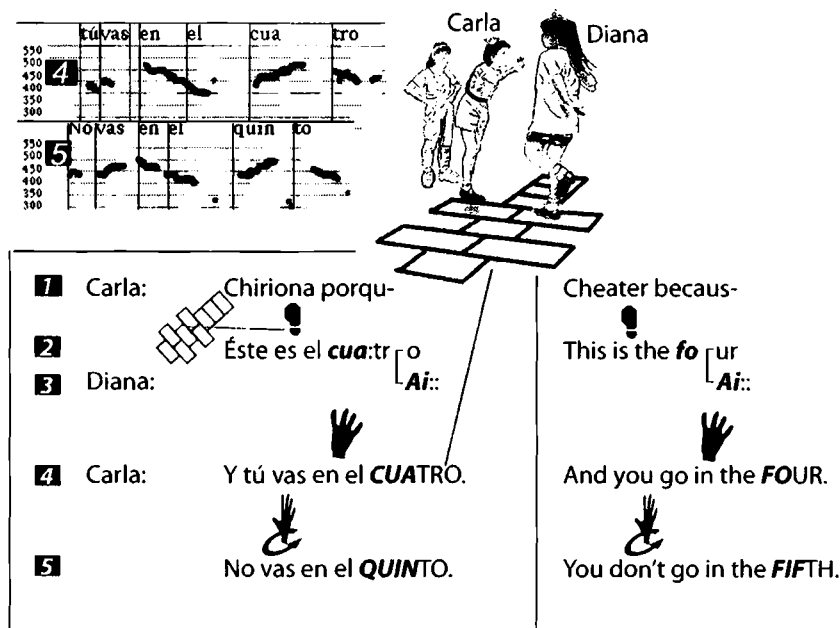|			
1	Carla:	Chiriona porqu-	Cheater becaus-
2		Éste es el *cua*:tr o	This is the *fo* ur
		Ai::	Ai::
3	Diana:		
4	Carla:	Y tú vas en el *CUA*TRO.	And you go in the *FO*UR.
5		No vas en el *QUIN*TO.	You don't go in the *FIF*TH.

Figure 2

Fourth, this exchange is embedded within a larger course of action within a particular activity, playing hopscotch. Carla begins the dispute by using her own body to stop Diana's movement through the grid. The characterization of Diana as a *Cheater* uses the game-relevant action that Diana has just performed as the contextual point of departure for the current action and characterization.[6] Carla's subsequent talk provides a warrant for why she is entitled to both provide such a categorization, and prevent Diana from continuing. She argues that Diana has just made an illegal move. Note that grammatically in Spanish, a pro-drop language, the second person pronoun found in line 4 *tú* (*you*) is not required, and indeed no such pronoun occurs in the almost identical syntactic frame produced a moment later in line 5. The fact that the pronoun is being produced when it could have been omitted suggests that it is doing some special work. One component of this may be rhythmic, and indeed dropping the pronoun when *No* occupies the same slot, — just before *vas*— at the beginning of line 5, enables

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[6] The way in which utterances derive both their meaning, and their status as particular kinds of actions from their placement within larger sequences, has long been the subject of sustained analysis within conversation analysis. See for example Sacks, Schegloff and Jefferson (1974), Schegloff (1968), and Heritage (1984).

Carla to build a pair of parallel utterances. However the pronoun may also help to shape the talk beginning at line 4, not as a *description* of what Diana just did (e.g. «You went in the Five»), but instead as an utterance that carries a *deontic* force, i.e. an argument about how her actual behavior contrasts with what was called for by the rules of the game in progress («You [should] go in the Four. Don't go in the Fifth»), with the *tú* perhaps referencing not Diana as a unique individual, but instead a player in her position who should act in a particular way. Through such structure in the talk the game in progress is formulated as a rule governed institution with normative consequences for discriminating permitted from illegal behavior. The structure of the encompassing activity is thus explicitly oriented to, and drawn upon as a resource for the constitution of action, within the detailed structure of the talk itself. The talk that occurs here is thus built in part through the use of the resources provided by an encompassing activity, while simultaneously constituting action within it, e.g. denying Diana the opportunity to complete her turn.

Fifth, this talk occurs within a particular participation framework (Goodwin 1981; Goodwin 1990a; Goodwin 1997; Heath 1986; Kendon 1990). With both their bodies and their gaze Carla and Diana orient toward each other. Note that this framework is not itself a speech act, such as a challenge. Instead it builds through the embodied stance a public field of mutual orientation within which a wide variety of speech acts can occur. Rather than being itself a momentary action within an exchange, it constitutes part of the interactive ground from which actions emerge, and within which they are situated (see also Kendon 1990). However, as we shall see later in this sequence this framework is built and sustained through the visible embodied actions of the participants. As such it, like the actions that occur within it, is open to challenge, negotiation and modification. Though it surrounds larger strips of diverse individual actions, it is itself a dynamic, interactively organized field.

Sixth, this framework of embodied mutual orientation makes it possible for sign systems other than talk to also function. As Carla pronounces *Cuatro* and *Quinto* she displays these same numbers with handshapes: Unlike many gestures, which display aspects of meaning that are not present in the stream of speech (Kendon 1997; McNeill 1992), these hand gestures provide visual versions of the numbers being spoken by Carla, i.e., *Cuatro* and the simultanous four fingered handshape and are alternative instantiations of a common lexical item, the number *four*. This tight overlap makes it possible to investigate with clarity one issue posed for the analysis of embodied action. If one conceptualizes action as the communication of propositional content, and/or with providing the addressee with the resources necessary to recognize some action being instantiated in the current talk (for example something that might be very loosely glossed here as a challenge), then the hand gesture is entirely redundant with the information provided in the stream of speech, and thus need not be taken into account in the analysis of the action occurring here; embodiment except in the stream of speech is irrelevant.

In opposition to such a position it will be argued here that the handshapes displaying the numbers present in the accompanying speech are not simply a visual mirror of the lexical content of the talk, but a semiotic modality in their own right. Analytically, it is not sufficient to simply characterize their **content** with a lexical gloss that describes the handshapes as redundant versions of the numbers in the talk (e.g. as alternative signifiers for a common signified such as *Five*). Instead the issues posed for a participant attempting to use such signs to build social action involve the organization of relevant phenomena within specific media, e.g. Carla has to use her body in a quite precise way while taking into account the visible body of her co-participant. She is faced with the task of using not only her talk, but also her body, to structure the local environment such that her gestures can themselves count as forms of social action. What precisely does this involve? Unlike talk gestures can't be heard. In looking at the data we find that Carla actively works to position her hand gestures so that they will be perceived by Diana. Unlike many accompanying gestures, Carla's hand is explicitly positioned in Diana's line of sight. Indeed the work of thrusting the gesturing hand toward Diana's face twists Carla's body into a configuration in which her hand, arm and the upper part of her torso are actually leaning toward Diana.

Carla's gesture is thus organized with reference to a specific embodied configuration, one that includes not only her own body, but also that of her addressee. Though the content being displayed here is congruent with what is being said within the talk, a quite different kind of work, involving the precise deployment of semiotic resources with properties quite unlike the structure of speech, is required in order to build social action with the gesturing hand. This same process of making visible congruent meaning through the articulation of different kinds of semiotic materials is also found in the production of the contrast found in lines 4 and 5. The number handshapes are framed by contrastive movements of Carla's arm and hand.[7] As Carla says «Y tú vas en el *Cua*tro» she stretches her arm forward with the palm toward Diana. However as she begins the next phrase she turns her hand around, while keeping the elbow which anchors the gesturing arm in the same position, and moves the upper arm to a new position closer to her own body, while still maintaining the forward thrust of her torso. By using the visual and rhythmic structure of her moving body Carla is able to establish a contrast within a larger gestural frame that parallels the one produced through reuse of common syntactic and prosodic frames in the talk. In brief, Carla is performing her action not only vocally, but also through a simultaneous sequence of gestural and body displays. Though done with quite different media these displays make visible the same two numbers that occur in the vocal stream, and highlight the contrast between them through a congruent

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[7] Describing these movements in writing is not entirely effective. The rhythmic and visual patterning of these movements can be seen much more clearly on the video. Ideally I would like to be able to include video clips in a paper like this.

display of contrastive items within a larger framework of parallel equivalence (e.g. the common syntactic frame in the talk, and the arm and torso establishing the variable handshapes as alternative values within a common framework of visible, embodied action)[8].

Given all of this embodied organization, the question still remains: why isn't the action that Carla is performing done entirely within the stream of speech? Why does she go to all of this extra semiotic work? Within interaction participants don't produce talk or build action into the air, but instead actively work to secure the orientation of a hearer (Goodwin 1981), and design the current action and utterance in fine detail for the particularities of the current addressee (Goodwin 1981; Sacks, et al. 1974). What Carla is doing here will fail as a form of pragmatic action if Diana does not take it into account. Through the use of the gesture Carla is able to specifically organize central components of her current action with reference to Diana's current visible orientation, i.e. positioning them right in Diana's line of sight. The gestures provide Carla with a semiotic modality for **insisting** that Diana take what she is doing and saying into account, indeed a way of quite literally getting into Diana's face with the particulars of the action. The way in which Carla thrusts her gestures toward Diana's face, as well as her walking into the grid when Diana is in the process of making a jump, help constitute what she is doing as a challenge to Diana. Carla's thrusted gestures are a proxemic challenge to Diana's personal space, as is her incursion into the game relevant territory of the grid in the course of Diana's attempt to move through it. These proxemic and territorial dimensions may be quite consequential in that Diana has actively attempted to continue her movement through the hopscotch grid despite Carla's challenge by continuing to jump until Carla pushes her in line 2. During the talk being examined here Diana is still standing on one foot, a posture that could allow her to pursue her turn at jumping further. On another level the gestural movements enhance and amplify the indignant force of the action.

In brief, talk and gesture mutually elaborate each other within 1) a larger sequence of action and 2) an embodied participation framework constituted through mutual orientation between speaker and addressee. It would seem that something like this set of concurrently relevant semiotic fields is what is being pointed to by the phrase «face-to-face interaction». However this is by no means a fixed array of fields. Thus on many occasions, such as phone calls, or when participants are dispersed in a large, visually inaccessible environment (e.g., a hunting party, or a workgroup interacting through computers), visible coorientation may not be present. I'll call some particular subset of possible fields that is being oriented to at a particular moment as relevant to the organization of a particular action a **contextual configuration**.

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[8] This contrast is also displayed through crucial rhythmic components (Erickson 1992) of both the talk and the gesturing arm. I am not however able to capture this in the transcript.

Changing contextual configurations

What happens next provides the opportunity to investigate in more detail how the shape of the current contextual configuration has consequences for the organization of action. As Carla says *«QUINTO» in* line 5, Diana looks down, moving her gaze away from Carla's face and gesturing hand, and toward the grid.

Figure 3

The participation framework which provided an essential ground for Carla's use of her gesturing hand is no longer operative. When Diana looks away Carla finds herself in the position of looking and gesturing toward someone who is now publicly disattending her. Such phenomena demonstrate how any participation framework is an ongoing contingent accomplishment, something not under the control of a single party (who can at best make **proposals** about the structure of participation that should be operative at the moment), but rather something that has to be continuously achieved through public displays of orientation within ongoing processes of interaction.

Not only the gesture but also the action Carla is performing, the challenge to Diana, is called into question by virtue of the way in which Diana is no longer visibly acting as a recipient to it. Let me note in passing that here, unlike some approaches to «speech acts» action is being analyzed here as a multi-party interactive phenomenon.

Does Carla in fact analyze these events in this way? Does she treat what Diana has done as undermining her current action, and if so what can she do about this?

Without the slightest break in her fluent, dynamic production of speech Carla restates the argument she has just made in a different way with a different kind of gesture. As Diana's head moves downward Carla drops her gesturing hand. However she now uses her foot to do a deictic stomp at a place constituted by the intersection of three different, mutually relevant, semiotic fields:

• First, the place where Diana is now looking, the target of her gaze and thus the place that she is visibly displaying to be the current focus of her orientation and attention.

• Second, one of the squares in the hopscotch grid that is the focus of the current dispute, indeed the square where Diana threw her beanbag

• Third, a square that is explicitly being talked about within Carla's current speech.

The structure of Carla's talk also changes in ways that adapt it to this new configuration of orientation and gesture. In lines 4 & 5 Carla used numeric expressions functioning as names to specify the entities being disputed: *el Cuatro* and *el Quinto*. Such language talked about these phenomena, but did not in any way presuppose that the participants were actually looking at the grid squares being talked about. Though available in the local scene the grid was not being put into play as something that had to be actively attended to and scrutinized in order to properly constitute the actions in progress at the moment. One could look elsewhere, and indeed this is precisely what Carla and Diana both did by gazing toward each other, and it was this structure of mutual orientation that Carla exploited by placing her numeric handshapes directly in Diana's line of sight.

By way of contrast, after Diana looks down Carla uses the deictic expressions *Éste* (*this*) and *ese* (*that*) (lines 6-7) to specify the particular squares at issue while using numbers to propose how they should be categorized.[9]

Such deictic expressions presuppose that their addressee is positioned to see what is being pointed at (which is being further specified by the concurrent foot point), and indeed the entities being pointed to are located precisely at the target of Diana's gaze. Orientation to the grid is now an explicit, crucial component of the operations that have to be performed to properly constitute the action currently in progress. The grid as something to be actively scrutinized is now in play as a relevant semiotic field implicated in the organization of the actions of the moment in ways that it wasn't a moment earlier.

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[9] Carla also used a deictic stomp accompanied by *éste* in line 2 to indicate a relevant square in the grid. At this point Carla is actually pushing Diana in an attempt to stop her progress through the grid. As the two moved apart Carla switched to the iconic handshapes thrust into Diana's face, an action that had the effect of leading Diana to gaze up toward Carla and her outstretched hand.
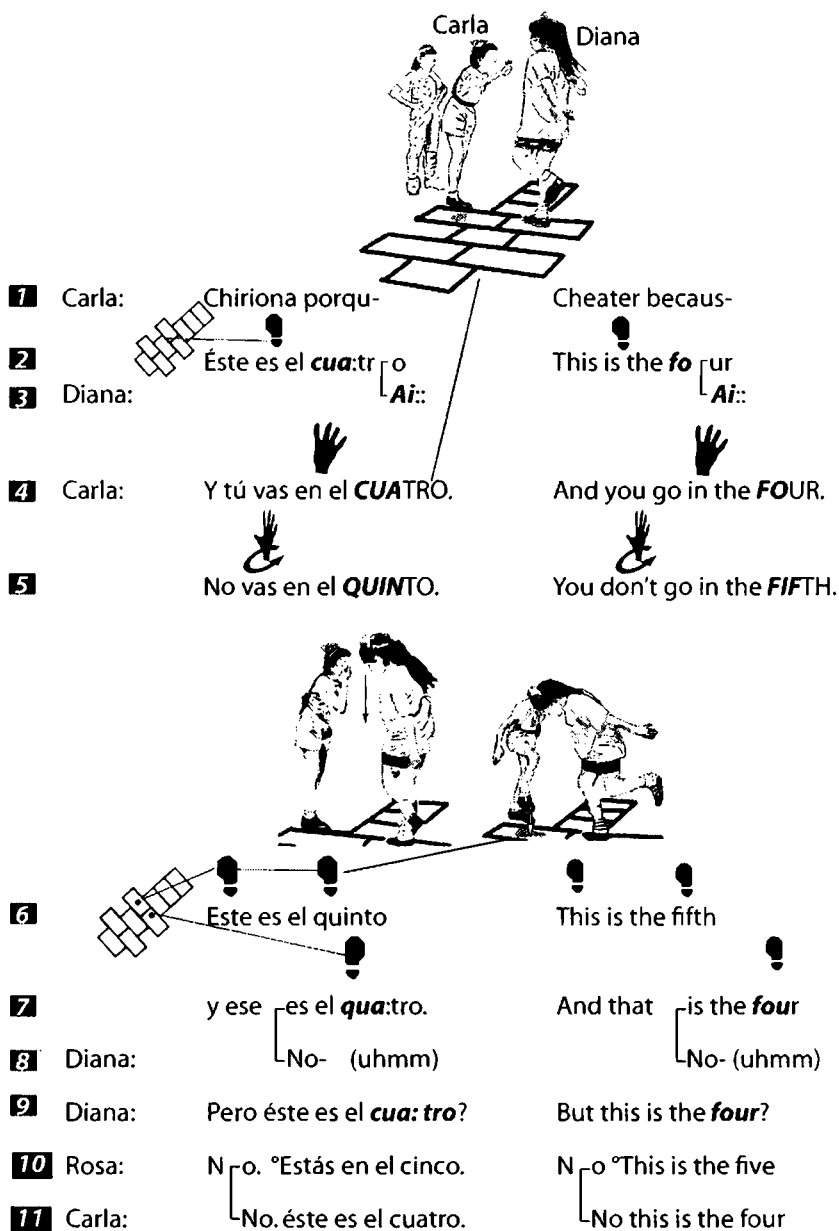
Carla   Diana

1 Carla:	Chiriona porqu-	Cheater becaus-
2	Éste es el **cua**:tr⌐o	This is the **fo** ⌐ur
3 Diana:	⌊**Ai**::	⌊**Ai**::
4 Carla:	Y tú vas en el **CUA**TRO.	And you go in the **FO**UR.
5	No vas en el **QUIN**TO.	You don't go in the **FIF**TH.

6	Este es el quinto	This is the fifth
7	y ese ⌐es el **qua**:tro.	And that ⌐is the **fou**r
8 Diana:	⌊No- (uhmm)	⌊No- (uhmm)
9 Diana:	Pero éste es el **cua: tro**?	But this is the **four**?
10 Rosa:	N⌐o. °Estás en el cinco.	N⌐o °This is the five
11 Carla:	⌊No. éste es el cuatro.	⌊No this is the four

Figure 4

In brief, what one finds within this single turn at talk is a switch from one contextual configuration to another.[10] The second contextual configuration contains a new semiotic field, the grid as something to be looked at, that wasn't necessary for the first. Despite the addition of this field, most of the semiotic fields in play during lines 4-5 remain relevant. The way in which contextual configurations are constituted through specific, somewhat contingent mixes of particular semiotic fields provides for the possibility of underlying continuity even while relevant change is occurring (e.g., sets of fields can overlap from one configuration to another). Rather than replacing one perceptual world with an entirely different one, there is relevant change in a continuing contextual gestalt as configurations are reconfigured. Despite this continuity the shifts that do occur are both significant and consequential for how participants build appropriate action. Thus the shift in focus to the grid that occurs here also involves changes in the kinds of sign systems, in both talk and gesture, used to refer to the entities being talked about. Though Carla is still pursuing her challenge, there has been a change in context or more precisely the particular contextual configuration of relevant semiotic resources that are providing the organization of the action of the moment.

The most crucial property relevant to the organization of action displayed through what happens here is *reflexive awareness*. Central to Carla's construction of action is the ongoing analysis of how her recipient is positioned to coparticipate in the interactive frameworks necessary for the constitution of that action. When Diana looks away Carla takes into account what Diana is doing and reorganizes her action in terms of it (see also Goodwin 1981). This reflexive awareness is not simply an «interior» element of the mental processes necessary for defining the action (as it could be analyzed for example within traditional speech act analysis) but a public, visible component of the ongoing practices used to build the action, something that leads to systematic, relevant changes in the shape of the action. Moreover, within this process the addressee, as an embodied actor in her own right, is as crucial a player as the speaker.

One of the things required for an actor to perform such rapid, reflexive adaptation is access to a set of structurally different semiotic resources, each of which is appropriate to specific contextual configurations. Here Carla is able to refer to and identify the same entities — specific positions in the hopscotch grid — with a number of different sign systems each of which has quite distinctive properties. These include numeric linguistic expressions functioning as names (which do not require looking at the entity being referred to – lines 4-5, though this can

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[10] See Goodwin (1981) for analysis of how ongoing talk is reorganized to make it appropriate to a new contextual configuration defined by a structural change in the type of recipient located as the addressee of the moment. See Hanks (1996a; 1996b) for analysis of both deixis and the relevance of the organization of spaces in the environment to the organization of action. For an analysis of narrative spaces relevant to the organization of pointing see Haviland (1996). The issue of relevance, posed by the pervasive possibility of alternative categorizations of the same entity, has long been a central theme of work in conversation analysis. See for example Schegloff (1972).

be built into their structure through syntactic affiliation with a deictic expression – lines 6-7), iconic hand gestures (which presupposed orientation toward the hand rather than the entity being described through the hand), deictic linguistic expressions and deictic or indexical gestures (both of which make relevant gaze toward the entity being pointed to). Not all of these resources are relevant and in play at any particular moment. However the ability to rapidly call upon alternative structures from a larger, ready at hand tool kit of diverse semiotic resources, is crucial to the ability of human beings to demonstrate in the ongoing organization of their action reflexive awareness of each other and the contextual configurations that constitute the situation of the moment.

Looking at these same phenomena from another perspective we find that the analyst cannot simply take an inventory of all semiotic resources in a setting that could potentially be brought into play, and use this inventory as a frame to describe a relevant context. As these data demonstrate, not all possible and relevant resources are in play at any particular moment. Indeed what happens here depends crucially on the way in which the grid **replaces** the hand displaying numbers and focus on each other's face as what is being oriented to at the moment. To describe the context we have to track in detail the temporal unfolding of the interaction, while attending to what the participants themselves are constituting for each other as the phenomena to be taken into account for the organization of the action of the moment (Sacks, et al. 1974). We are thus faced with the task of describing both the larger set of possibilities from which choices are being made, and the way in which alternative choices from that set structure the events of the moment in consequentially different ways.

Semiotic structure in the environment

Another crucial component of this process is the hopscotch grid being talked about and pointed at. The grid differs radically from both talk and gesture in many important respects. Unlike the fleeting, evanescent decay of speech, which disappears as material substance as soon as it is spoken (unless captured in another medium such as writing or tape recording), the hopscotch grid has both an extended temporal duration — it is there in exactly the same form throughout the game, and in the present case of a painted grid on a playground, day after day for new games — and is built of concrete material so durable that it can support the weight of multiple actors jumping through it. Rather than constituting a mental representation, it is as corporeal, solid, and enduring as the ground the players are walking upon. However it is simultaneously a thoroughly semiotic structure. Indeed it provides crucial frameworks for the building of action that could not exist without it, such as successful jumps, outs, fouls, etc. The actions that make up the game are impossible in a hypothetical «natural environment» unstructured by human practice, e.g. a field without the visible structure provided by the gridlines. Simultaneously the game is just as impossible without embodiment of the semiotic structure provided by the grid in a medium that can

be actually jumped on. The notion that the primary focus for the analysis of human action should be the isolated mental states of individual actors here becomes impossible. As demonstrated quite powerfully in the work of Hutchins (1995), human cognitive activity is situated within historically shaped social systems that encompass both actors and crucial semiotic artifacts such as the maps needed to navigate ships.

Conclusion

Despite its simplicity, the mix of semiotic fields found in a scene such as the hopscotch game locates a perspicuous site for developing an approach to the analysis of human action that takes into account simultaneously the details of language use, the semiotic structure provided by the historically built material world, the body as an unfolding locus for the display of meaning and action, and the temporally unfolding organization of talk-in-interaction.

Analyzing action as something accomplished through the temporally unfolding juxtaposition of multiple semiotic fields with quite diverse structures and properties, has a range of consequences. First, the analytic boundaries between language, cognitive processes and structure in the material world dissolve. The actions made visible in Carla's talk were not constituted in any single field, such as the talk, but rather within a larger configuration in which a range of different fields (the talk, the pointing foot or finger, the semiotic structure provided by the grid, the larger encompassing activity, etc.) mutually elaborated each other.

This framework is analytically different from many approaches to both cognition and embodiment that focus primarily on phenomena lodged within the individual. For example, much study of metaphor has taken as its point of departure the embodied **experience** of the speaker, e.g. the way in which metaphor emerges from the structure of the human body, its position in a world structured by phenomena such as gravity (e.g. the pervasive relevance of *Up* and *Down* in human cognition and language) and «preconceptual structures of experience» (Johnson 1987: 15). While providing valuable insight into many kinds of conceptual organization, such focus on the interior life of a single actor does not develop a systematic framework for investigating the **public** visibility of the body as a dynamically unfolding, interactively organized locus for the production and display of relevant meaning and action. Crucial to the organization of the events being investigated here is the ability of **other** participants to systematically see how a co-participant's body is doing specific things by virtue of its positioning within a changing array of diverse semiotic fields.[11] Diana is seen to be following or not following the rules of the game in progress by virtue of how

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[11] Such public visibility and construal of relevant events is crucial to many areas of human social life. See Goodwin (1994) for analysis of how such public practices for organizing vision enabled lawyers defending the policemen who beat Rodney King to shape what the jury saw on the tape in a way that exonerated the policemen while shifting the focus of attention to Rodney King's actions.

her body is positioned within the hopscotch grid. Such actions are public and accountable (as demonstrated by Carla's challenge and attempt to prevent Diana from continuing). Their analysis requires a framework that focuses not primarily on Diana's interior life (though what she wants to do is visible to all), but instead on the visible juxtaposition of her body and the grid, within a recognizable course of activity. Human cognition encompasses, and is embedded within, the semiotic structure provided by historically shaped frameworks for action, instantiated in both material media, and the systematic practices of a group performing the activities that constitute its lifeworld. Such public visibility is also crucial to analysis of how the body is used to perform action within interaction. Carla takes into account the patterns of orientation visibly displayed by Diana's gaze and posture by changing her own actions in response to them. Central to what is occurring in these data (and in face-to-face interaction in general) are socially organized, interactively sustained configurations of multiple participants who use the public visibility of the actions being performed by each others' bodies, the unfolding sequential organization of their talk, and semiotic structure in the settings they inhabit to organize courses of action in concert with each other.

The human body is unlike most other phenomena in the scene. Within interaction the body is a dynamic, temporally unfolding field that displays a reflexive stance toward other coparticipants, the current talk, and the actions in progress. Moreover the actions made visible by the body are quite diverse. Some, such as a display of orientation toward another participant or a relevant feature of the surround have a temporal organization that extends over multiple actions occurring within an extended strip of interaction. Gestures, including both iconic representations such as the numeric handshapes and the deictic points found here, can have a far shorter temporal duration. Moreover these two kinds of action function at different levels of organization. Gestures can carry propositional information and function as individual actions, or components of multimodal actions. By way of contrast the displays of postural orientation used to build participation frameworks help establish the interactive ground that frames and makes possible the production, reception and joint constitution of a variety of different kinds of action built through gesture and talk. The body functions in yet another way when prosody and intonation are used to display alignment and stance (Couper-Kuhlen/Selting 1996; Goodwin 1998). Rather than locating a homogeneous field for analysis, the notion of embodiment encompasses many different kinds of phenomena.

As the rearrangement of contextual configurations in the hopscotch data demonstrated, context is not simply a set of features presupposed or invoked by a strip of talk, but is itself a dynamic, temporally unfolding process accomplished through the ongoing rearrangement of structures in the talk, participants' bodies, relevant artifacts, spaces and features of the material surround that are the focus of the participants' scrutiny. Crucial to this process is the way in which the detailed structure of talk, as articulated through sequential organization, provides for the continuous updating and rearrangement of contexts for the produc-

tion and interpretation of action. Within the rich matrix of diverse semiotic resources that create relevant contextual configurations, action, setting and the meaningful body reflexively constitute each other through temporally unfolding processes of situated human interaction.

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